

GRITS

Working with AVM Data

Astronomy Visualization Metadata

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Casey Rosenthal
clr@ipac.caltech.edu

Presentation Overview

AVM Data Formats

Software Packages to Read/Write AVM

One Implementation

Future Possible Implementations

AVM Data Format

AVM is XMP [eXtensible Metadata Platform]

XMP is RDF [Resource Description Framework]

RDF is XML [eXtensible Markup Language]

http://virtualastronomy.org/avm_metadata.php

XMP

Stores Metadata in Media Files

Created by Adobe

Implemented in many Adobe Products

<http://www.adobe.com/products/xmp/>

RDF

W3C Standard

URIs to Describe Relationships as 'Triples'

Graph Data Merges [Semi-]Structured Schemas

Intended for Semantic Web

<http://www.w3.org/RDF/>

XML

W3C Standard

Text Format for Describing Data

<http://www.w3.org/XML/>

XML Example:

```
<?xml version="1.0"?>  
<!DOCTYPE "country.dtd">  
<country>  
  <name>USA</name>  
  <state>  
    <name>California</name>  
  </state>  
</country>
```

RDF Example:

```
<?xml version="1.0"?>  
<rdf:RDF xmlns:rdf="..." xmlns:cd="http://...">  
  <rdf:Description rdf:about="http://...">  
    <cd:artist>Good Artist</cd:artist>  
    <cd:year>1985</cd:year>  
  </rdf:Description>  
</rdf:RDF>
```


XMP Example:

```
<?xml version="1.0"?>
```

```
<x:xmpmeta xmlns:x='adobe:ns:meta/'>
```

```
  <rdf:RDF
```

```
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-  
    syntax-ns#">
```

```
    ...
```

```
  </rdf:RDF>
```

```
</x:xmpmeta>
```

AVM Example:

```
<?xml version="1.0"?>
```

```
<x:xmpmeta xmlns:x="adobe:ns:meta/">
```

```
<rdf:RDF>
```

```
  <rdf:Description  
    xmlns:avm="http://www.communicatingastrono  
my.org/avm/1.0/">
```

```
    <avm:CreatorURL>
```

```
      http://www.spitzer.caltech.edu
```

```
    </avm:CreatorURL>
```

Software to Read/Write XMP

Adobe's XMP Toolkit SDK

- C++
- Unix/Mac/Windows cross-platform
- BSD License

Libraries

Adobe XMP Toolkit SDK (C++)

Adobe XMP Library for ActionScript (AS)

Exempi (C)

Python XMP Toolkit (Python)

ExifTool (Perl)

SemWeb.NET (C#/.Net/Mono)

PHP Jpeg Metadata Toolkit (PHP)

Library Status

Fractured and Partial Support

Adobe Changes Format

Adobe Changes Underlying Toolkit

=> Implementation Support Issues

One Implementation

Ruby Wrapper to ExifTool via Pipes

Read as XML, Search Using XPath

Write as Command-Line Options

Custom AVM Template for ExifTool

[http://github.com/clar/astronomy_visualization_metadata_exiftool_profile]

Future Possible Implementations

Central Authoritative AVM Servers

Open APIs for Collaboration

RDBMS Servers (SQL)

Document Storage Engines (NoSQL)

RDF Query Engines

XQuery

Resources

<http://www.adobe.com/products/xmp>

<http://www.w3.org/RDF>

http://virtualastronomy.org/avm_metadata.php

<http://code.google.com/p/python-xmp-toolkit/>

<http://www.sno.phy.queensu.ca/~phil/exiftool/>

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